

from Ceylon in comparatively recent times. Many indeed, such as the rats and shrews, have undoubtedly been imported unintentionally by human agency. Few of the species have been isolated long enough for them to have diverged even subspecifically. There are, however, several exceptions to this rule, notably three species of birds and the Flying Fox (*Pteropus giganteus ariel*) which can be distinguished as indigenous forms.

For the benefit of other workers, it is intended to publish in this series a number of papers drafted by those scientists who have examined the collections. These, it is hoped, will give a clear picture of the type of fauna to be found in the Maldive Islands, where much more collecting and systematic work is required before our knowledge of the fauna can be considered fairly complete.

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#### PART II—MAMMALS

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There are few published records of mammals from the Maldive Archipelago. Gardiner (1906), during a survey of the fauna of the Maldive and Laccadive Archipelagos, recorded *Pteropus medius* [= *Pteropus giganteus giganteus* later separated from the Indian Flying Fox under the name *Pteropus ariel* by Allen (1908)], *Suncu*

*murinus*, and *Rattus rattus alexandrinus*, the two latter forms almost certainly introduced by man. More recently, Allen (1936) has described *Pteropus hypomelanus maris* from Addu Atoll, a form which is a western outlier of a predominantly Austro-Malayan species. These notes are based on a collection obtained by Major W. W. A. Phillips on the more northerly atolls of the Maldive Archipelago (mainly on Malé) during the period December 1956 to February 1957. The collection includes all the forms previously listed from the Archipelago except *Pteropus hypomelanus maris*, and adds the house mouse, *Mus musculus castaneus*, certainly introduced by man, to the known fauna of this group of islands. Major Phillips also notes that domestic rabbits have been liberated and now run wild on certain of the islands. He encountered no Microchiroptera during his visit to the Archipelago. Major Phillips, who is well known for his work on the mammals of Ceylon, has supplied the Maldivian names of the mammals and has been kind enough to add his field comments to my own remarks on the material. His notes are placed in square parentheses at the end of the systematic matter and are initialled 'W.W.A.P.' All measurements are in millimetres, and are quoted in the form of the minimum and maximum for each series, followed by the arithmetic mean in parentheses.

***Suncus murinus caerulescens* (Shaw): Musk Shrew**

1796 *Sorex pilorides* Shaw, Mus. Lever. 2 :31 (Not of Pallas, 1799, which is indeterminate).

1800 *Sorex caerulescens* Shaw, Gen. Zool. Mamm. 1:533. India.

1831 *Sorex giganteus* Geoffroy, Voy. Bélanger Indes. Orient. Zool. 117. Bengal.

♂♂ 57.388-389, ♀♀ 57.390-392, juvenile 57.393. Albino specimens, ♂♂ 57.394-395, ♀♀ 57.396-397, juvenile 57.398. Malé Atoll.

Maldivian name: *Hickundi*

Dorsally, the normally coloured specimens of this small series are blue-grey and rarely have the hairs tipped with fawn or brown. In this they differ from specimens of *S. m. murinus* from Madhya Pradesh and Ceylon. [For notes on the latter race see Lindsay (1929) and Phillips (1935) (called *Suncus caeruleus caeruleus* by these authors)]. The underparts are very slightly paler than the back while the whiskers and the hairs of the tail and feet are white or grey-white. The series as a whole averages larger than *S. m. murinus* and in all respects closely resembles specimens from Ceylon referred by Phillips (1935) to *S. m. giganteus* [called *caerulescens* by Ellerman and Morrison-Scott (1951)]. The specimens are accordingly referred to that race, which Phillips observes is common around Colombo and other

Ceylonese seaports, having been introduced from India where it is found in Bombay and at other ports in addition to its natural range in the Darbhanga and Midnapore Districts. It has probably been introduced to Malé through the agency of the dhows that ply between that atoll and the western ports of Ceylon. Phillips (1935) notes that albino or semi-albino specimens of this shrew are 'not uncommon' in Ceylon. External measurements of seven adults: head and body 133-158 (144), tail 80-98 (86), hindfoot 21-24 (22), and ear 14-16 (15).

[These shrews are very plentiful on Malé Island, especially in and around the bazaar and residential areas. They live in the coral-stone walls, under piles of loose building materials and refuse, and less often in holes in the ground originally dug by large land-crabs. Early in the dusk they come into the open and often invade houses and shops, their high pitched squeaking giving warning of their presence when they have been alarmed. Undoubtedly they are, on balance, beneficial creatures as they help to rid the shops of many large cockroaches and other all too plentiful noxious pests. Almost 50% of them are pure white, with dark eyes. Fleas (*Xenopsylla astia*) were found on one specimen but generally they are parasitised more by mites than by fleas.—W.W.A.P.]

***Pteropus giganteus ariel* Allen: Maldivian Flying Fox.**

1906 *Pteropus medius* Temminck, Gardiner, Fauna and Geography of Maldives and Laccadive Archipelago, 2, Supplement, 2:1049.

1908 *Pteropus ariel* Allen, *Bull. Mus. Comp. Zool. Harvard*, 52, 3:28, pl. figs. 1-3. Malé Atoll, Maldives Islands.

1912 *Pteropus ariel* Allen, Andersen, Catalogue of Chiroptera, 1:335.

♂ 57.399, ♀ 57.400 Malé Atoll. ♂♂ 57.401-403, ♀ 57.404 Hululé Island, North Malé.

Maldivian name: *Va*

The only specimens hitherto recorded in collections appear to be the type and an immature female in the collection of the Museum of Comparative Zoology, Harvard, and a male collected by Gardiner now preserved in the British Museum (Natural History). (B.M. 8.12.26.1). There is also in the latter collection a dealer's skin without skull (B.M.1937.11.5.1) said to have originated from the Maldives Islands. The six skins collected by Major Phillips conform closely to Allen's description (B.M.8.12.26.1 is preserved in alcohol and therefore unavailable for colour comparison) and show no taxonomically significant differences in colour when compared with *P. g. giganteus* from the southern provinces of peninsular India. The forearm, however, is shorter than that of the mainland race. The skulls

of these specimens, when compared with those of *P. g. giganteus*, are shorter, narrower, and have a shorter rostrum and comparatively heavier dentition. A summary of their external and cranial measurements and a comparison with those of twenty-seven skulls of *P. g. giganteus* from the southern provinces of India is given in Table I.

TABLE I  
COMPARATIVE MEASUREMENTS OF *P.g. giganteus* AND *P.g. ariel*

Dimension	<i>Pteropus g. giganteus</i> (27 specimens)	<i>Pteropus g. ariel</i> (6 specimens)
Forearm	154-176 (169)	137-160 (152)
Condylbasal Length	65.8-75.5 (70.5)	61.2-70.7 (64.9)
Width of Brain-case (at zygomatic root)	24.0-26.4 (25.1)	23.4-25.7 (24.2)
Zygomatic Width	34.4-43.2 (39.7)	31.8-43.9 (36.4)
Postorbital Width	9.5-11.2 (10.1)	8.4-11.3 (9.5)
Interorbital Width	7.2-9.4 (8.3)	8.9-10.4 (9.5)
c-m <sup>2</sup>	23.7-29.5 (26.8)	23.5-27.0 (25.3)
c-m <sup>3</sup>	27.6-32.4 (30.4)	26.6-30.3 (28.4)
Mandible Length	49.9-58.5 (54.0)	47.0-56.5 (50.5)
Width m <sup>1</sup> -m <sup>1</sup>	18.4-22.3 (20.1)	17.8-21.0 (19.1)
Length p <sup>*</sup>	4.3-5.1 (4.7)	4.2-5.0 (4.5)
Width p <sup>*</sup>	2.9-3.9 (3.5)	3.3-3.9 (3.6)
Length m <sup>1</sup>	4.8-5.7 (5.3)	4.9-5.8 (5.4)
Width m <sup>1</sup>	2.4-3.6 (3.3)	3.1-3.6 (3.4)

As suggested by Allen (1936), this form is clearly an insular race of *Pteropus giganteus*, defined by its reduced body and cranial size. Ellerman and Morrison-Scott (1951) evidently overlooked this paper, and following Andersen (1912) listed *ariel* as a species within the *giganteus* group. *Pteropus hypomelanus maris* Allen, *Rec. Ind. Mus.* 38: 343, 1936 from Heratara, Addu Atoll, south end of Maldive Archipelago is not listed in this work.

[Flying Foxes are plentiful throughout North Malé Atoll and are reported to be moderately so in all the atolls. They appear to be rather more diurnal than the mainland form and may be seen flying over at any time throughout the day but more commonly, of course,

in the early evenings when many often come in to feed long before sunset. Passing from island to island they fly high over the seas, generally each on its own course.

There is no roost on Malé itself but two large colonies are to be found on Hululé close by, where several hundreds spend the day hanging from the branches of groups of large evergreen trees; in the early evening they fly over to Malé to raid the fruit and crops, especially the mangoes.

Although they are not eaten by the Maldivians, they are occasionally shot in order to control their numbers and protect the fruit crops.—  
W.W.A.P.]

**Rattus rattus ceylonus** (Kelaart): Common Rat

1850 *Mus ceylonus* Kelaart, *J. Ceylon Br. Asiat. Soc.* 2:213. Ceylon.

1851 *Mus nemoralis* Blyth, *J. Asiat. Soc. Bengal* 20:168 (Not of de Sélys Longchamps, 1841).

♂♂ 57.405-406, juveniles 57.407-409 Malé Atoll.

Maldivian name: *Meetha* or *Meeda*.

These specimens represent the common House Rat and are very similar to *R. r. rufescens* in appearance. Ellerman and Morrison-Scott (1951) use *ceylonus* for the common commensal form in Ceylon following Hinton (1919) who used *nemoralis*, but Phillips (1935) lists the Indian House Rat (*R. r. rufescens*) as introduced to the neighbourhood of ports in Ceylon and regards the native commensal form of that island as *Rattus rattus kandianus*. This material is slightly blacker and less rufous on the back than specimens of *ceylonus* from a number of Ceylonese localities, but the difference is very small.

**Rattus rattus kandianus** (Kelaart)

1850 *Mus kandianus* Kelaart, *J. Ceylon Br. Asiat. Soc.* 2:212. Nuwara Eliya Ceylon.

1850 *Mus tetragonurus* Kelaart, loc. cit. 217. Hendala, near Colombo, Ceylon.

1887 *Mus kandianus* Kelaart, loc. cit. 326 (Emendation in reprint of 1850 publication).

♂♂ 57.410 Hululé Island, North Malé. 57.411 Malé Atoll.

Both specimens have the back yellowish brown coarsely streaked with black, the hairs with slate-grey bases. The underparts of 57.411 are predominantly buff-yellow, the hairs having light grey bases and yellow or buff tips. Those of 57.410 are cream white, with the hairs light coloured throughout their length. The feet of 57.411 are brown but those of 57.410 are much lighter and are predominantly whitish in colour. They are slightly paler and less rufous than specimens of *kandianus*, but otherwise closely resemble the Ceylonese form.



[Rats of the *Rattus rattus* group are very plentiful throughout the islands, both near habitations and amongst the undergrowth in the coconut plantations. Largely diurnal in their habits, they may commonly be met with during the heat of the day, climbing in the bushes, poking amongst the low herbage, or climbing up the bare, smooth stem of a coconut palm in order to nibble the miniature nuts in the crown. Many of them have a loathsome appearance and are, wisely, shunned by the local people for, although they do not appear to harbour many fleas, they generally swarm with mites.

In Malé, they infest the bazaar areas, graveyards, and compounds, but their numbers are kept in check to some extent by the domestic cats that have been imported for that purpose. Breeding is probably continuous throughout the year; during December, January, and February numerous nests containing young were brought in.—W.W.A.P.]

**Mus musculus castaneus** Waterhouse: Eastern House Mouse

1843 *Mus castaneus* Waterhouse, *Ann. Mag. Nat. Hist.* 12:134. Philippine Islands.

1852 *Mus manei* Kelaart, *Fauna Zeyl.* 64. Ceylon. (Gray, 1843, *List.Mamm.* 111. *nom. nud.*).

1865 *Mus rama* Blyth, *J. Asiat. Soc. Bengal* 34:194. Penang.

1922 *Mus musculus sinicus* Cabrera, *Bol. Real. Soc. Esp. H.N.* 22:166. Ningpo, Chekiang, southern China.

♂♂ 57.412-415, ♀♀ 57.417-418, Juvenile 57.416, North Malé.

Maldivian name: *Japan Meetha* or *Japan Meeda*.

Schwarz and Schwarz (1943) use *castaneus* for the House Mice from the Indian peninsula and Ceylon. These specimens agree closely in size and dorsal colour with material from Ceylon and the southern part of the Indian peninsula. Ventrally, however, four specimens are slate-grey tinged with ochreous, while the remainder are ochraceous cream with complete exclusion of grey.

[Curiously enough, House Mice were rather scarce, even in the bazaar areas, possibly due to the presence of domestic cats and too many House Rats and Musk Shrews. They live in the shops and also in houses in the residential area and have habits as in other parts of the world. Nearly 50% of them are ochraceous cream in colour, ventrally.—W.W.A.P.]

**R a b b i t s** (*Oryctolagus cuniculus* Linnaeus).

Domesticated rabbits, of various colours, have been turned loose on several islands, notably on Willingilli, close to Malé. They have reverted to the wild state and hide amongst the undergrowth, but come

out to feed in glades in the evening. It is likely that they will establish themselves as a feral species in due time.

#### CETACEA

##### Whales.

Whales visit the atolls irregularly, and are sometimes captured; there appears to be no record of the species.

Dolphins. (Maldivian names: *Comas*, *Firebocomas*, and *Onuthunmas*).

It was our intention to collect specimens of Dolphins. However, it was found that Dolphins and Porpoises are regarded with superstitious aversion by the local fisherfolk, so we were unable to procure any for examination. Schools of both large beaked dolphins and smaller porpoises were frequently observed close to Malé but no reliable identification could be made.

Deraniyagala (1956) states that he procured a water-worn skull, without mandible, of *Delphinus delphis* Linnaeus on Furadifuri Island.—W.W.A.P.]

#### SUMMARY

The mammalian fauna of the Maldives Islands, as far as it is known, consists of two indigenous species of Megachiroptera, one species of insectivore, one species of lagomorph, and two rodent species, the latter comprising three races. All but the Megachiroptera have been introduced by human agency. Of the fruit bats, *Pteropus hypomelanus maris* is the western outlier of a predominantly East Indian and Sundanesian species, linking that species to a more modified member of the *Pteropus hypomelanus* group, *Pteropus subniger*, from the Mascarene Islands, Réunion, and Mauritius. The other, *Pteropus giganteus ariel*, is an insular race of the Indian Flying Fox, as might be expected. The musk shrew, *Suncus murinus*, is commensal and has been widely distributed by man over many of the small islands of eastern Asia and the East Indies. It, together with *Rattus rattus ceylonus*, *Rattus rattus kandianus*, and *Mus musculus castaneus*, appears to have reached the Maldives from Ceylon. This is not unexpected, since the principal communication with the Maldives is conducted from the western ports of Ceylon while much less use is made of routes to south Indian ports. However, the rats especially show small differences in colour from the Ceylonese races and, while this may indicate a slight degree of subspeciation, it seems quite probable that the populations of shrews, rats, and mice found on the Maldives

Islands have been derived from several, including Indian, sources. The rabbit, unlike the foregoing, appears to be a deliberate introduction to the Islands.

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